

THREE NEW SPECIES OF *GALIUM* FROM THE NORTHERN ANDES

LAURAMAY T. DEMPSTER
Jepson Herbarium, Department of Botany,
University of California, Berkeley 94720

ABSTRACT

Three new species of *Galium* are named and described: *G. antuneziae* of Peru, with hairless fruits, shows some similarities to *G. mandonii* Britton, *G. cajamarcense* from Peru, also with hairless fruits, has a general resemblance to *G. corymbosum* R. & P. of sect. *Relbunium*, but lacks the involucre diagnostic of that section; *G. fosbergii* of Ecuador seems closest to *G. diffusoramosum* Dempster & Ehrendorfer, although the hairs are reduced in number and not uncinat.

RESUMEN

Se nombran y describen tres nuevas especies de *Galium*: *G. antuneziae* de Perú, con frutos sin tricomas, muestra semejanzas con *G. mandonii* Britton, *G. cajamarcense* de Perú, también con frutos sin tricomas, se asemeja a *G. corymbosa* R. & P. de la sección *Relbunium*, pero carece del involucro diagnóstico de esa sección; *G. fosbergii* de Ecuador al parecer se relaciona con *G. diffusoramosum* Dempster & Ehrendorfer, aunque las tricomas de los frutos son escasos y no uncinulados.

In the course of my work on *Galium* sect. *Relbunium*, I have located three specimens that do not belong to that section nor to any named species of *Galium*. This paper is, therefore, a codicil to my three longer papers on South American *Galium* (Dempster 1980, 1981, 1982). I describe and name herein three new species based on these specimens.

***Galium antuneziae* Dempster, sp. nov. (Fig. 1).**

Herba perennis semiprostrata, caulibus lignosis flexibilibus. Foliis in quoque verticillo quatuor, ellipticis, petiolo brevi. Floribus solitariis axillaribus pedunculo brevi; corollis rotatis, profunde divisis, albis, latitudine 2.5 mm; lobis ovatis apice gracili; ovariis fructibusque subtiliter tuberculatis.

Semi-erect perennials with long (to 50 cm) flexible woody stems ending in tufts of fine-textured herbage; young stems with narrow angles having short urceolate hairs. Leaves 4 at nodes, less than 8 mm long, elliptical, shortly petiolate with few short stoutish curved hairs, mostly on reflexed margins, ribs and pulvinate bases. Flowers perfect, solitary in axils, on short peduncles, scarcely exerted beyond leaves; corollas white, rotate, 2.5 mm across, deeply divided, the 4

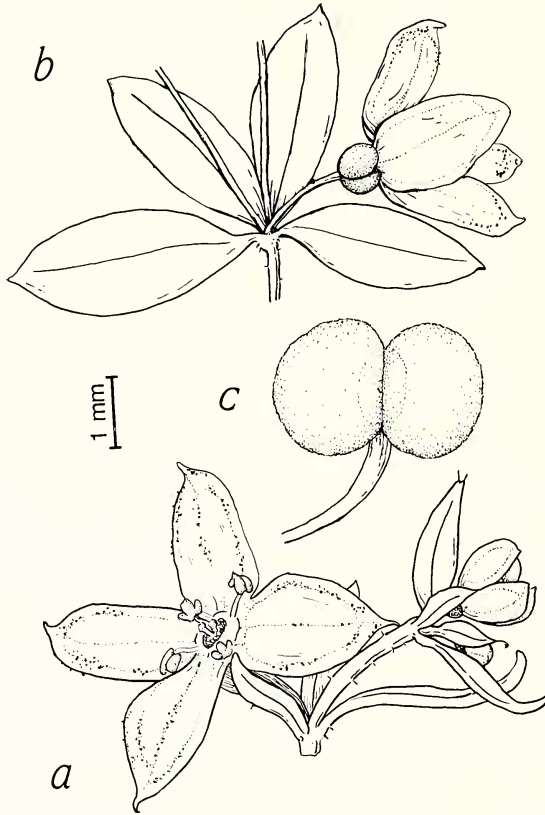


FIG. 1. *Galium antuneziae*. a. Flowering branchlet. b. Node with solitary flower. c. Young fruit. All illustrated from type, *Antunez de Mayolo 110*.

lobes ovate with short attenuated tips, glabrous externally, the interior surfaces with many glandular tack-shaped hairs scattered on the apical half; ovaries and fruits very finely tuberculate; fruits dry, 3 mm across; mericarps partially spherical, but flattened at juncture.

TYPE: Peru, Huancavelica, near Churcampa, 2500 m, on slopes bordering cultivated fields, *Antunez de Mayolo 110* (holotype: F; isotype: OBI).

PARATYPE: Near Churcampa at 3100 m, *Antunez de Mayolo 248* (UC), erroneously attributed to *G. mandonii* Britton (Dempster 1982).

Galium antuneziae shows some similarity to *G. mandonii* in that the leaves of both are narrowed to a petiole above a hairy pulvinate base, have narrow stem angles with numerous small retrorse hairs, and have short-pedicelled flowers solitary in axils. *Galium mandonii*, however, differs in having lax herbaceous stems above a fibrous root system, smaller corollas relative to ovaries, larger, narrower and more remote leaves, and 8-sulcate ovaries.

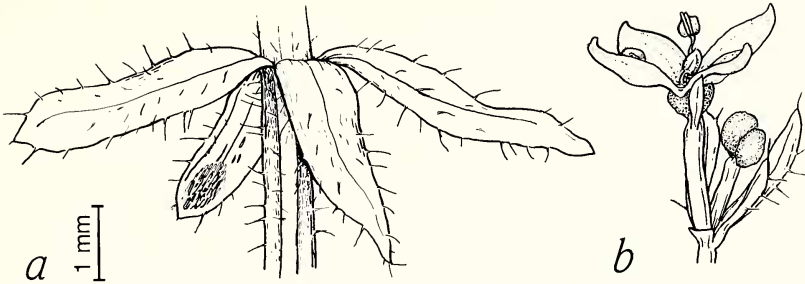


FIG. 2. *Galium cajamarcense*. a. Node. b. Flowering branchlet. Illustrated from type, Beck 7880.

The name is for the collector, whom I met in Peru in 1977, where she was studying indigenous dye plants, including *Galium*.

***Galium cajamarcense* Dempster, sp. nov. (Fig. 2).**

Herba perennis caespitosa caulibus foliisque pilis longis patentibus dispersis. Foliis in quoque verticillo quatuor, usque ad 4 mm, oblongis, internodia aequantibus. Floribus paucis, pedicellatis, ramulis brevibus foliosis insidentibus; corollis rotatis, profunde divisis, lobis ovatis obtusis; ovariis laevibus. Fructibus ignotis.

Tufted perennials to 6 cm tall, from creeping root system; stems and leaves with scattered long spreading hairs. Leaves 4 at nodes, ca. 4 mm long, about as long as internodes, oblong with abruptly acute unarmed apices; glandular cells in a dense subapical cluster. Flowers few, pedicellate, on short leafy axillary branchlets; corollas rotate, 2 mm across, deeply divided, the four lobes ovate, obtuse, glabrous; ovaries smooth. Fruits unknown.

TYPE: Peru, Dept. Cajamarca, 15 km southwest of Cajamarca at edge of Cumbe Mayo Park, 3400 m, "Cesped abierto pedregoso", Beck 7880 (holotype: UB).

This species bears a general resemblance to forms of *G. corymbosum* Ruiz & Pavon sensu lato of sect. *Relbunium*. Unlike that complex species, however, the flowers of *G. cajamarcense* are pedicellate and without involucre.

***Galium fosbergii* Dempster, sp. nov. (Fig. 3).**

Herba perennis scandens polygama, caulibus gracilibus lignosis; foliis in quoque verticillo quatuor, usque ad 6 mm, ovatis apicem tenuem versus angustatis, petiolatis, base tomentosis, margine costaque et pagina superna pilis brevibus antrorsis instructis; floribus paucis ramulis insidentibus; pedicellis capillaribus usque ad 9 mm, exsertis; corollis rotatis, profunde divisis, lobis ovatis, obtusis; fructibus immaturis, pilis rectis sparse instructis.

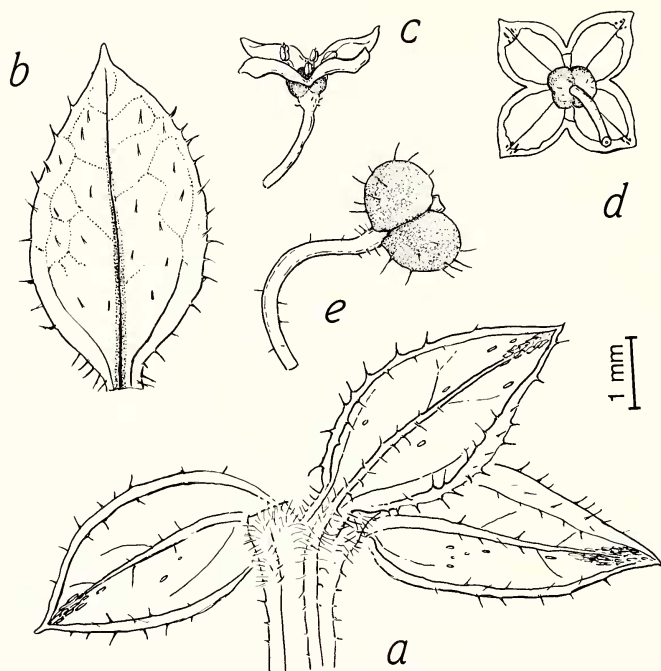


FIG. 3. *Galium fosbergii*. a. Node, showing under side of 3 leaves. b. Leaf, upper side, showing triple venation. c. Staminate flower. d. Same from below. e. Immature fruit. All illustrated from type, *Fosberg and Giler 22945*.

Lax, monoecious or polygamous perennials with slender woody stems, clambering or climbing to 35 cm; stems sparsely set with short retrorse hairs. Leaves 4 at nodes, up to 6 mm long, ovate, tapered to a slender apex and narrowed to a petiole above a hairy, often swollen and sometimes persistent base; leaves more or less obscurely 3-nerved, the upper surfaces set with short antrorse hairs, the lower surfaces glabrous except for the midribs. Flowers on few-flowered well exserted axillary branches; pedicels capillary, 1.5–9 mm long, well exserted beyond bracts; corollas rotate, 2 mm across, divided to near base, glabrous, the lobes ovate, obtuse. Fruits (immature) sparsely set with very short, straight, slightly antrorse spreading hairs.

TYPE: Ecuador, Loja, northeast slope of Cerro Mataperro, 1815 m, steep dry slope of decomposed slaty shale, tangled in bushes, *Fosberg and Giler 22945* (holotype: US).

The often swollen and persistent leaf bases of *G. fosbergii* suggest a relationship with *G. diffusoramosum* Dempster & Ehrendorfer, of northern Chile. Characters of inflorescence, flowers, and leaves also are compatible with that species. The fruit hairs of *G. fosbergii*,

however, are not uncinata but, although sparse, they are straight as in sect. *Lophogalium*. Although fruit hairs are typically of taxonomic importance in *Galium*, I think that *G. fosbergii* represents a reduction in number and shape of hairs, rather than a closer relationship with sect. *Lophogalium*. The large geographical distance between *G. fosbergii* and *G. diffusoramosum* (ca. 2800 km) precludes the consideration of the former as an aberrant form of the latter.

ACKNOWLEDGMENTS

Thanks are owing to Alan Smith for criticising my Latin, and to Victoria Sosa for correcting my Spanish.

LITERATURE CITED

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NOTEWORTHY COLLECTION

ARIZONA

SALIX PLANIFOLIA Pursh. ssp. *PLANIFOLIA* (SALICACEAE).—Apache Co., Fort Apache Indian Reservation, White Mts., Smith Cieniga, along Ord Creek, 33°56'N, 109°35'W, 9890-10,000 ft, dominant in *Salix* thicket along creek, associated with *S. arizonica*, wet saturated soils of igneous origin, heavily browsed by elk, 9 Jul 1987, C.-E. Granfelt 87-1 (ARIZ, CAN). White Mts., Bull Cieniga, along Ord Creek, 33°55'30"N, 109°35'30"W, 10,240 ft, only *Salix* in saturated meadows and on slopes adjacent to creek, closely browsed by elk, 29 Jul 1987, C.-E. Granfelt 87-24, 87-25, 87-26 (CAN). Identified by George W. Argus.

Previous knowledge. Trans-subarctic-boreal from Alaska to Newfoundland south to New Hampshire and British Columbia extending southward in the cordillera to California and the mountains of northern New Mexico and Utah. Inclusion of Arizona in range given by Martin and Hutchins (*Flora New Mexico*, 1980) is undocumented.

Significance. New to the flora of Arizona. In Arizona this species seems to occur at somewhat lower elevations (10,000-10,240 ft) than it does in nc. New Mexico where it occurs at 10,500-11,500 ft. The species in the southern cordillera has usually been referred to var. *monica* (Bebb) C. Schneider. The status of this taxon is under study.—GEORGE W. ARGUS, National Herbarium, Museum of Natural Sciences, Ottawa, ON K1A 0M8, Canada and CARL-ERIC GRANFELT, Box 630, Pinetop, AZ 85935.